ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

HT-PP In-house drainage pipes
GEORG FISCHER BUILDING FLOW SOLUTIONS

EPD HUB, HUB-5263
Published on 04.02.2026, last updated on 04.02.2026, valid until 03.02.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD HUB PCR version 1.2 (24Mar 2025) and JRC characterization factors EF 3.1.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Georg Fischer Hakan Plastik Boru ve Profil Sanayi Tic. A.Ş.
Address	Organize Sanayi Bölgesi Gaziosmanpaşa Mah. 3.Cad. No:11-13 59500 Çerkezköy, TEKİRDAĞ Turkey
Contact details	gf.iletisim@georgfischer.com
Website	www.georgfischer.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR cPCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025 EN 16903 Complementary Product Category Rules (PCR) for buried plastics piping systems
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Dr. Shima Holder Hjort
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Vera Durão, as an authorised verifier acting for EPD Hub Limited

PRODUCT

Product name	HT-PP In-house drainage pipes
Additional labels	-
Product reference	-
Place(s) of raw material origin	World
Place of production	Çerkezköy, Turkey
Place(s) of installation and use	Europe
Period for data	Calendar year 2025
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	8,13

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
Mass of packaging	0,069 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	4,09
GWP-total, A1-A3 ($kgCO_2e$)	4,04
Secondary material, inputs (%)	1,46
Secondary material, outputs (%)	2,94
Total energy use, A1-A3 (kWh)	17,2
Net freshwater use, A1-A3 (m^3)	0,02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

With a rich history in industrial innovation since 1802, GF is actively reshaping itself to become the global leader in Flow Solutions for Buildings, Industry and Infrastructure. GF delivers Excellence in Flow through essential products and solutions that enable safe and sustainable transport of water and other fluids worldwide. Following the Uponor acquisition and integration, GF has brought together its collective expertise and technologies into a unified portfolio of Flow Solutions for Buildings. This allows GF to offer reliable systems that perform throughout a building's entire lifecycle – from construction to daily operations – ensuring they are both future-proof and sustainable. Headquartered in Switzerland, GF is listed on the SIX Swiss Exchange.

PRODUCT DESCRIPTION

As one of the leading suppliers of plastic pipe systems, GF attaches great importance to product development. GF HT-PP pipes are made of polypropylene that guarantees lightweight, high resistance to chemical agents, excellent resistance to abrasion. These perfect characteristics are suitable for the construction of waste and drainage systems of buildings and other underground systems in accordance with EN1451-1 and they have B2 flammability class resistance to fire with DIN 4102. The pipes are used to lead drainage and wastewater from the building to wastewater network and are available in grey colour from DN32 to DN160. The pipes are available with and without in-line socket, which is a solid part of the pipe and is produced on extrusion production line.

Further information can be found at: www.georgfischer.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	100	International, Europe
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,00016

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = ND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The raw material supply (A1) includes the extraction and processing of polypropylene granulate, sourced from certified suppliers internationally. In this module transportation (A2) by trucks and ships from the raw material suppliers to the factory gate, as well as internal transport is considered. Manufacturing (A3) involves energy-efficient pipe extrusion with in-line socketing, conducted under controlled or cleanroom conditions to minimize contamination and ensure compliance with industry-specific purity standards. The pipe and socket are made of the same material. Product assembly and quality control include rigorous inspection and testing procedures to ensure mechanical performance, dimensional accuracy, and purity. Waste generated during production is minimized; manufacturing waste is recycled internally. The manufacturing stages are:

– Material conveying
– Extrusion (melting and processing of material)
– Pipe profile calibration
– Cooling
– Pipe marking
– Cutting
– Packaging

Packaging is designed to maintain product cleanliness during handling and transport. To ensure this, products are typically packed with plastic clamps, polyethylene (PE) bags and stretch film for protection, and packed in corrugated cardboard boxes or wooden crates depending on product type and shipping mode. Packaging materials are recyclable and comply with EU environmental and safety standards.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

In stage A4, transport from the production site in Turkey to customers across Europe is primarily done with lorries (>32 metric tons, Euro 6) and an average of 352km distance. The transportation distance is defined according to the PCR. Transport distances and modes vary by destination but are optimized to reduce environmental impact, including route planning and shipment consolidation. The transport scenario is based on a weighted average scenario based on sales shares for the different markets. No materials are lost in transportation.

The installation scenario in this infrastructure product EPD is based on TEPPFA's (The European Plastic Pipe and Fittings Association) industry averaged EPDs. These documents and their background reports include industry consensus estimates of the resource use, emissions and affluents of typical European installations; these parameters have been used as input for the EPD modelling. Environmental impacts from installation include standardized energy and installation tools, waste packaging materials and release of biogenic carbon dioxide from wood pallets.
The installation occurs on-site in dedicated trenches for wastewater piping systems. Energy for excavation, stomping and filling the trench has been considered. Water usage for first flushing, testing and cleaning is considered as well as the associated water waste treatment. Due to product design and specification, it is considered that no product waste is generated at the installation site. Wastes from installation are the packaging materials (cardboard boxes, EU pallets, PE bags and stretch film and PP fixation bands). The packaging materials are collected on-site and sent for waste treatment (50km/truck); EU Pallets are sent for incineration, while the remaining packaging materials are sent to plastic or paper recycling.

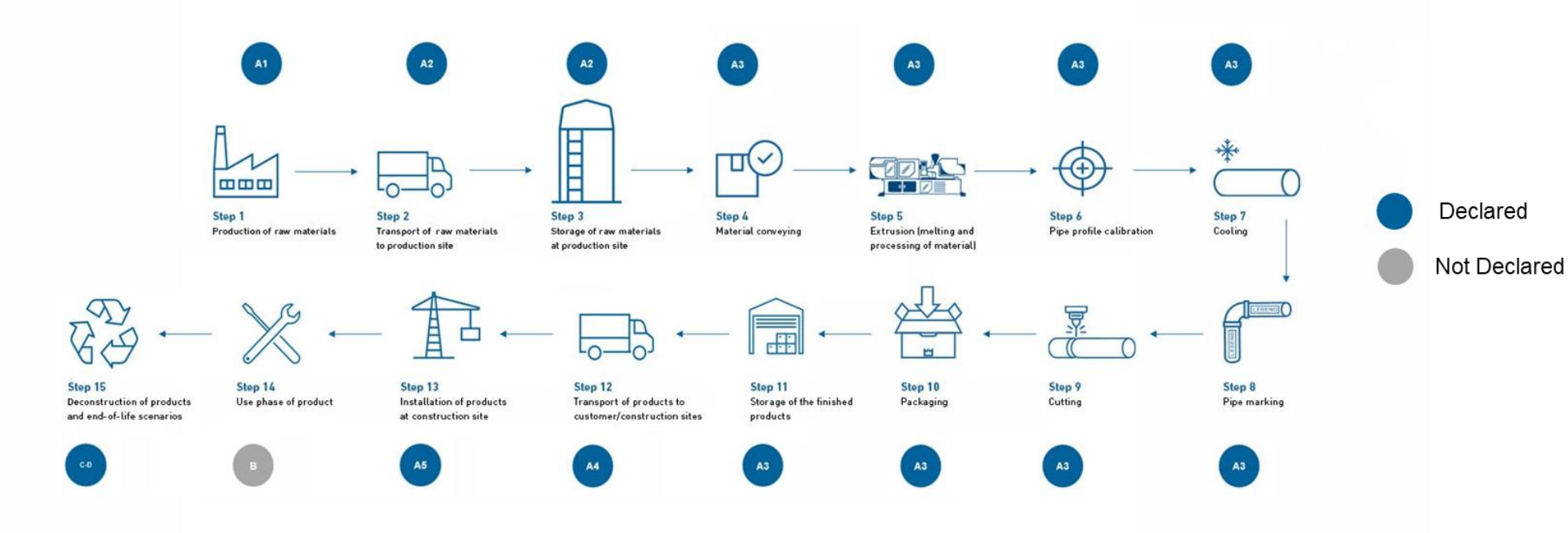
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The end-of-life scenarios included in the EPD are currently in use and are representative of one of the most likely scenarios. Product end-of-life primarily takes place in Europe. It is assumed that deconstruction is a site activity and that the products are deconstructed after a lifetime of 50 years. Since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed negligible (C1). 5% of the end-of-life product is assumed to be sent to the closest treatment facilities (C2). The collected 5% from the demolition site is sent to recycling (C3), whereas the remaining 95% is left inert underground (C4). Beyond the system boundaries (D), loads and benefits for the treatment of the product and packaging waste by recycling, and waste wood packaging by incineration have been considered.

SYSTEM BOUNDARY



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

This EPD is product and factory specific.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD System Verification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

The installation scenario in this infrastructure product EPD is based on TEPPFA's (The European Plastic Pipe and Fittings Association) industry averaged EPDs: https://www.teppfa.eu/sustainability/environmental-footprint/epd/

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	3,63E+00	3,26E-01	8,18E-02	4,04E+00	3,89E-02	1,90E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,69E-04	8,34E-03	0,00E+00	-2,35E-01
GWP – fossil	kg CO_2e	3,63E+00	3,26E-01	1,34E-01	4,09E+00	3,89E-02	1,39E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,69E-04	8,34E-03	0,00E+00	-2,19E-01
GWP – biogenic	kg CO_2e	2,56E-03	5,49E-05	-5,24E-02	-4,97E-02	8,49E-06	5,12E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,61E-02
GWP – LULUC	kg CO_2e	2,17E-03	1,72E-04	2,26E-04	2,56E-03	1,51E-05	1,97E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,20E-07	4,55E-06	0,00E+00	-1,39E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}e$	8,74E-08	4,78E-09	2,79E-09	9,49E-08	8,12E-10	2,44E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,97E-12	2,22E-11	0,00E+00	-5,61E-09
Acidification potential	mol H^+e	1,24E-02	8,20E-03	4,07E-04	2,11E-02	9,18E-05	1,14E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,18E-07	1,31E-05	0,00E+00	-7,83E-04
EP-freshwater[2)]	kg Pe	8,20E-04	1,27E-05	3,01E-05	8,63E-04	2,72E-06	6,71E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,09E-08	8,47E-07	0,00E+00	-5,48E-05
EP-marine	kg Ne	2,41E-03	2,04E-03	9,84E-05	4,55E-03	2,41E-05	5,35E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,01E-07	8,31E-06	0,00E+00	-1,47E-04
EP-terrestrial	mol Ne	2,51E-02	2,27E-02	9,76E-04	4,87E-02	2,61E-04	5,75E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,28E-06	4,11E-05	0,00E+00	-1,52E-03
POCP ("smog")[3)]	kg NMVOCe	1,44E-02	6,24E-03	5,70E-04	2,13E-02	1,60E-04	1,75E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,35E-06	1,24E-05	0,00E+00	-8,84E-04
ADP-minerals & metals[4)]	kg Sbe	2,36E-05	4,16E-07	6,40E-07	2,46E-05	1,11E-07	7,59E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,51E-10	2,99E-08	0,00E+00	-1,31E-06
ADP-fossil resources	MJ	8,56E+01	4,14E+00	2,57E+00	9,23E+01	5,84E-01	1,72E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,90E-03	2,53E-02	0,00E+00	-5,25E+00
Water use[5)]	m^3e depr.	9,33E-01	1,32E-02	5,80E-02	1,00E+00	2,99E-03	6,94E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,93E-05	1,19E-03	0,00E+00	-5,79E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,58E-07	1,32E-08	4,72E-09	1,76E-07	3,79E-09	3,23E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,69E-11	2,12E-10	0,00E+00	-8,89E-09
Ionizing radiation[6)]	kBq U235e	1,20E-01	2,19E-03	9,03E-03	1,31E-01	7,04E-04	1,59E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,40E-06	2,17E-04	0,00E+00	-1,30E-02
Ecotoxicity (freshwater)	CTUe	3,83E+01	3,56E-01	4,06E+00	4,27E+01	6,88E-02	1,33E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,52E-04	2,77E-02	0,00E+00	-2,19E+00
Human toxicity, cancer	CTUh	6,59E-10	6,68E-11	8,11E-11	8,07E-10	6,48E-12	1,96E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,44E-14	3,87E-12	0,00E+00	-3,74E-11
Human tox. non-cancer	CTUh	2,53E-08	1,32E-09	9,06E-10	2,75E-08	3,78E-10	3,30E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,53E-12	6,72E-11	0,00E+00	-1,48E-09
SQP[7)]	-	9,24E+00	1,04E+00	4,91E+00	1,52E+01	5,88E-01	1,54E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,93E-03	4,77E-02	0,00E+00	-5,84E-01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	2,10E+00	3,63E-02	2,28E+00	4,42E+00	9,51E-03	-1,91E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,35E-05	3,35E-03	0,00E+00	-4,20E-02
Renew. PER as material	MJ	0,00E+00	0,00E+00	5,49E-01	5,49E-01	0,00E+00	-5,49E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,63E-01
Total use of renew. PER	MJ	2,10E+00	3,63E-02	2,83E+00	4,97E+00	9,51E-03	-5,68E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,35E-05	3,35E-03	0,00E+00	1,21E-01
Non-re. PER as energy	MJ	5,26E+01	4,14E+00	7,26E-01	5,75E+01	5,84E-01	6,21E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,91E-03	-2,10E+00	0,00E+00	-3,66E+00
Non-re. PER as material	MJ	3,30E+01	0,00E+00	1,12E+00	3,41E+01	0,00E+00	-1,12E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,65E+00	-3,04E+01	4,50E-01
Total use of non-re. PER	MJ	8,56E+01	4,14E+00	1,85E+00	9,16E+01	5,84E-01	-5,03E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,91E-03	-3,75E+00	-3,04E+01	-3,21E+00
Secondary materials	kg	1,46E-02	1,93E-03	5,63E-03	2,21E-02	2,53E-04	1,26E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,66E-06	1,66E-04	0,00E+00	1,08E-02
Renew. secondary fuels	MJ	1,30E-04	7,66E-06	1,83E-02	1,85E-02	3,19E-06	2,69E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,11E-08	1,35E-06	0,00E+00	-6,99E-06
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	2,31E-02	3,45E-04	1,31E-03	2,48E-02	8,62E-05	1,45E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,77E-07	1,81E-05	0,00E+00	-1,42E-03

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,53E-01	5,75E-03	7,53E-03	2,67E-01	8,45E-04	3,19E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,62E-06	5,28E-04	0,00E+00	-1,43E-02
Non-hazardous waste	kg	1,17E+01	8,42E-02	6,37E-01	1,24E+01	1,69E-02	4,25E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,22E-04	1,63E-02	0,00E+00	-8,26E-01
Radioactive waste	kg	2,92E-05	5,34E-07	2,28E-06	3,20E-05	1,74E-07	3,96E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,33E-10	5,55E-08	0,00E+00	-3,24E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	9,75E-01	0,00E+00	1,92E-02	9,94E-01	0,00E+00	2,84E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	5,00E-02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,95E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	3,59E+00	3,25E-01	1,33E-01	4,05E+00	3,86E-02	1,38E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,68E-04	8,32E-03	0,00E+00	-2,16E-01
Ozone depletion Pot.	kg CFC_{-11}e	7,13E-08	3,79E-09	2,30E-09	7,74E-08	6,46E-10	1,94E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,17E-12	1,89E-11	0,00E+00	-4,58E-09
Acidification	kg SO_2e	1,03E-02	6,55E-03	3,29E-04	1,72E-02	7,28E-05	8,06E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,01E-07	1,02E-05	0,00E+00	-6,51E-04
Eutrophication	kg PO_4^3e	8,97E-02	7,33E-04	1,63E-03	9,21E-02	1,82E-05	1,92E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,71E-07	2,51E-06	0,00E+00	-4,64E-03
POCP (“smog”)	kg C_2H_4e	9,21E-04	3,29E-04	5,73E-05	1,31E-03	7,43E-06	6,17E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,24E-08	1,05E-06	0,00E+00	-5,89E-05
ADP-elements	kg Sbe	2,32E-05	4,09E-07	6,28E-07	2,43E-05	1,09E-07	7,42E-08	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,32E-10	2,95E-08	0,00E+00	-1,29E-06
ADP-fossil	MJ	8,37E+01	4,10E+00	2,42E+00	9,02E+01	5,73E-01	1,69E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,85E-03	2,15E-02	0,00E+00	-5,04E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	3,63E+00	3,26E-01	1,34E-01	4,09E+00	3,89E-02	1,39E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,69E-04	8,34E-03	0,00E+00	-2,19E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, wind, 1-3MW turbine, onshore, Turkey, Ecoinvent; Transformation and transmission losses 6% according to National statistics
Electricity CO2e / kWh	0,0129
District heating data source and quality	-
District heating CO2e / kWh	-

Transport scenario documentation - A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	EURO6 truck >32 ton, diesel 0.2 l/h
Average transport distance, km	352
Capacity utilization (including empty return) %	80
Bulk density of transported products	-
Volume capacity utilization factor	<1

Installation scenario documentation - A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	Excavation, Hydraulic Digger, 0,1982 m^3
Water use / m^3	0,00037
Other resource use / kg	-
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	Diesel, burned in building machine, Ecoinvent, World Average, 0.1305 MJ
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Cardboard: 0,00248 kg PE: 0,02488 kg PP: 0,00103 kg Wood: 0,04048kg
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	% are for recycling, incinerated w. energy recovery, landfill respectively. Cardboard: 100%, 0%, 0% PE: 100%, 0%, 0% PP: 100%, 0%, 0% Wood: 0%, 100%, 0%
Direct emissions to ambient air, soil and water / kg	0,00048

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	0,05
Collection process – kg collected with mixed construction waste	-
Recovery process – kg for re-use	-
Recovery process – kg for recycling	0,05
Recovery process – kg for energy recovery	-
Disposal (total) – kg for final deposition	0,95
Scenario assumptions e.g. transportation	50 km transport by truck to local recycling station/landfill

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Vera Durão, as an authorised verifier acting for EPD Hub Limited
04.02.2026

VERIFIED ISO 14025